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# **Can Digging Make You Happy? Archaeological Excavations, Happiness and Heritage**

## **Abstract**

Current government agendas for investigating the ‘Gross National Happiness’ have spurred private and commercial organisations to consider whether their work has the potential to influence peoples’ happiness and sense of wellbeing (Aked, Marks, Cordon Thompson, 2008). The role of archaeology projects has yet to be considered, despite the body of research pertaining to their wider social values (Kiddey and Schofield, 2010; Simpson, 2010). By combining quantitative methodological wellbeing measures offered by Positive and Negative Affect Schedule (PANAS) and Modified Visual Analogy Scale (MVAS), this research evaluates if it is possible to identify the role archaeological projects play in enhancing wellbeing. The analysis of the quantitative data is used to assess whether it is possible to quantitatively identify and link changes in cultural values to involvements in heritage projects. This paper sets out a methodological framework for analysing heritage wellbeing, providing guidelines for future evaluations of the cultural value of heritage.

**Keywords:** archaeology; community; happiness; wellbeing; quantitative

## **Introduction**

It has proved difficult for professionals and academics to accurately define wellbeing and happiness; in part this relates to the intangible nature of these concepts (Griffin, 1988).

Wellbeing is typically associated with physical health and quality of life (Seligman, 2011; Griffin, 1988). Happiness is associated with mental health, personal satisfaction and positive emotional states (Seligman, 2011; McNaught and Knight, 2011). In recent years, happiness has also been defined as positive wellbeing (Seligman, 2011). Happiness and wellbeing are identified and measured through various categories; for example, job satisfaction or the belief that life is meaningful and worthwhile (Lyubomirsky, Sheldon, and Schkade, 2005). Positive wellbeing has also been associated with high levels of personal happiness (McNaught and Knight, 2011). Thus happiness and wellbeing are often used interchangeably or understood as integral components of each other (McNaught and Knight, 2011).

Society has been fascinated with the idea of finding true happiness for centuries, (Hume, 2003; Argyle, 2001) to the extent that ‘the pursuit of happiness,’ has been regarded by many as part of human nature (Haidt, 2007). Examples of this can be found in classical literature, including Aristotle’s conclusion that happiness was linked to personal connections and relationships with others (Aristotle, trans. 2009). Plato’s *Republic* suggests that happiness can be found by achieving virtue, wisdom, courage, moderation and justice. Philosophical and, more recently, psychological discussions regarding happiness have continued to grow over recent decades, with innumerable academics and practitioners researching and writing public and scholarly articles and books relating to happiness (Griffin, 1986; Hume, 2003; Argyle, 2001; Haidt, 2007).

Organizations such as the United Nations (UN) have sought to investigate the wellbeing paradigm on a global scale and improving national wellbeing has become a political goal for many governments. The UK government’s Office of National Statistics

has attempted to capture, measure and note changes in society's wellbeing, which it has measured through positive and negative associations across categories such as satisfaction, worthwhileness, personal happiness and anxiety. Thus, much like advanced economics, happiness and wellbeing have become hallmarks of a 'healthy' society's development.

Mirroring a trend from many countries around the world, the UK government commissioned a national survey to measure wellbeing (*Office for National Statistics*, 2012/13). The Office for National Statistics (ONS) wellbeing survey measured changes in UK population over a 3 year period. This survey was based on both objective and subjective measures, which consisted of 41 headline measures in ten domains, including: health; where we live; what we do, and; our relationships (Evans, Macrory, Randall, 2015, p.1). This aimed to chart how lives had improved, deteriorated or remained static over time (Evans et al, 2015, p. 2). The questions for this study were, in part, based on those from the Health Questionnaire (Beaumont and Lofts, 2013, p. 1; Goldberg and Hillier, 1979). The ONS survey was based on an 11-point likert scale (ranging 0-10). This scale was uniformly selected for all the questions in the ONS survey to enable comparison and analysis across different sections, to produce more consistent responses, and because it is considered a simple method for the respondent.

In 2008, the New Economics Foundation, supported by the government, qualitatively researched what made people happy and produced five evidence-based actions for wellbeing (Aked, Marks, Cordon Thompson, 2008). These were:

- Connect
- Be Active.

- Take Notice
- Keep Learning.
- Give

Based on this understanding of happiness, a voluntary project which provides opportunities to connect and to be active, and which encourages curiosity and learning, is likely to make people happy and increase wellbeing. Consequently, these factors provide the basis for all recent assessments of happiness, including the Reader Association; an Arts and Humanities Research Council (AHRC) funded project in partnership with English Literature Outreach (Billington, Davis and Farrington, 2014).

The value of even small improvements in wellbeing was demonstrated by the Foresights Mental Capital and Wellbeing Project, which suggested that wellbeing can help people to flourish and decreases mental health problems (Aked et al, 2008; Foresight, 2008). By assessing participants' wellbeing based on positives, such as contentment, enjoyment, curiosity and engagement, the project concluded that 14% of the UK have a high level of wellbeing, whilst 14% have a very low level of wellbeing (Aked et al, 2008, p. 2).

Given the obvious value to society of improved wellbeing and the role that voluntary projects that involve strong elements of social connectivity and learning can have in creating such wellbeing, there is a genuine opportunity for individual participation in community archaeology projects to demonstrate benefits for society and increasing levels of wellbeing for those involved. Therefore, it is critical to archaeology as a profession that archaeologists start to investigate the role archaeology can play in increasing national wellbeing. Furthermore, academically, in the UK, proving the value 'impact' of research

is becoming essential for University Research Excellence Frameworks.

### **Archaeology and Happiness**

The social and community impacts of archaeology and heritage have been an area of growing interest both academically and politically in the last decade (Holtorf, 2005; Simpson, 2010; Howard, 2003; Merriman, 2004; Ascherson, 2000; English Heritage, 2014). In the UK, English Heritage has commented on archaeology's ability to create 'pride', 'a sense of place' and 'a sense of community' by providing a joint community activity and linking the present with the past (2000; 2006; 2014). English Heritage has also recently commissioned a study on the impact of visiting physical heritage assets on wellbeing, investigating the relationship between heritage and wellbeing on a sample of the UK population (Fujiwara, Cornwall and Dolan, 2014; English Heritage, 2014, p. 7). The results of this research suggest that visiting one or more heritage sites, specifically historic towns and historic building, has a significant, positive impact on individual wellbeing (Fujiwara et al, 2014, p. 26).

The social value of the practice of archaeology and heritage was formally introduced by Lipe (1984), and expanded on by Darvill (1995). These authors developed their theories from sociology and psychology, suggesting a systems model for archaeology and the public based on input, outcomes and impact (Lipe, 1984; Darvill, 1995). Lipe asserted that archaeology was of public value and that this value was created through personal and dynamic encounters with the physical remains of the past. His research suggested that archaeology provided individuals with a self-conscious interface with the past and the future (Lipe, 2007, p. 291). Darvill developed these social value

concepts, recognizing that social values were present throughout the practice and public consumption of archaeology. Critically, it was Darvill (1995) who identified archaeology's role in creating wellbeing, suggesting that archaeology created and maintained tradition, belonging and a feeling of 'existence' for people in the present, which in turn created connectivity and wellbeing. Archaeological, sociological and psychological literature proposes that excavation is an important component to maintaining and creating the public's view of the past, of history and also of themselves (Holtorf, 2005; Slick, 2002). It follows that active community involvement in archaeological excavations could play a vital role in creating an understanding of self and supporting the development of positive participant wellbeing and happiness. For those taking part in archaeological excavations, it could be suggested that practical involvement in the full sensory experience of archaeology gives participants a personal link with the past and helps them form social relationships with the physical materials (Renfrew, 2006; Wallace, 2006).

Archaeology's humanistic approach, and the concept that human beings can alter the conditions of their existence through action has led to suppositions that archaeology can offer deeper personal values that in turn could influence wellbeing and happiness (Thomas, 2004, p. 1). For instance, Freud used archaeology as a metaphor for psychoanalysis, asserting that the analyst was like an archaeologist, uncovering objects and fragments from the past in order to reconstruct the connections between them (Freud, 1961; 1964). Theories drawn from psychologists and sociologists, including Lev Vygotsky (1978) and Lave (1990), suggest that practical 'cognitive' and 'experiential' learning, that is both enjoyable and entertaining, which could include activities like active

involvement in archaeological excavation, is crucial to personal social and educational development. Consequently, Cunliffe (1981) has suggested that excavations provide a path to self-discovery. As such, those engaged in archaeology may not only be uncovering physical evidence of the past, but also their own identities and desires (Hodder, 2004, p. 149; Holtorf, 2005, p. 17). These theories could indicate that personal, active involvement in the process of archaeological excavation could provide an individual with a form of therapy and catharsis. (Thomas, 2004, p. 149-151).

It has been asserted that the benefits of participation in archaeology are not just personal, but have a wider social impact at a local and community level, that in forming relationships with the past, individuals also form relationships with each other (English Heritage, 2006; Thomas, 2004: 195). Archaeologists working with excluded groups on community archaeology projects have provided some evidence of the personal benefits of local engagement, including building confidence and forming relationships with both people and places (Kiddey and Schofield, 2011).

The social benefits of participation in archaeology are far from conclusively researched, but professional and academic archaeologists have suggested possible areas of research and evidence (Simpson, 2010; Kiddey and Schofield, 2011). For instance, Shoreditch Park project, reported that physical involvement in an archaeological project and connection with the local community by youth offenders and adults on probation had positive psychological benefits, including building confidence and providing social engagement, enabling them to communicate with other members of the community, talk through their own experiences and issues, and to consider their future beyond the past (Simpson, 2010). Renfrew (2006) and Smith (2006) both suggested that helping a usually



excluded social group to build a sense of belonging and respect for an area through activities such as archaeological excavation leads to reduced anti-social behaviour. Thus, multidisciplinary social research into archaeological public values and its wider impact indicates the tantalizing possibility of the positive benefits of individual and community involvement in archaeological excavation projects.

### **Museums and Happiness**

Museums have been instrumental in evaluating the social outcomes and therapeutic benefits of heritage, leading the way in implementing formal evaluation methods. Researchers at University College London (UCL), in an AHRC funded quantitative and qualitative have investigated the impact on hospital patients of handling archaeological and historical objects (Thomson, Ander, Menon, Lanceley and Chatterjee, 2012). This research used psychologically accredited measures to analyse wellbeing change over time, which included the Positive and Negative Affect Schedule (PANAS, Watson, Clark and Tellegen, 1988) and Visual Analogy Scale (VAS) (EuroQol Group, 1990). The results indicated that heritage, specifically practical engagement with the historic objects, had a direct, therapeutic impact on the wellness and happiness of the patients (Thomson et al., 2012). These results are corroborated by the findings of the Paul Hamlyn Foundation and Arts Council supported ‘Happy Museum’ project ([www.happymuseumproject.org](http://www.happymuseumproject.org)).

Many sub-disciplines within the profession of archaeology share similar methodological approaches to public engagement with those of museums, including hands-on practical activities. Despite this, archaeology lags behind museums in the

application of quantitative research to evaluate its potential therapeutic and wellbeing impact. As such, this article aims to provide quantitative evidence as to the impact of participation in archaeological excavation wellbeing.

## **Methodology**

### **Aim**

The aim of this study was to quantitatively assess the impacts of archaeological excavation on wellbeing. Using PANAS and MVAS, two systems of measurement specifically designed to assess changes in wellbeing and personal happiness, the study sought to identify significant changes to participant wellbeing during the life-course of the excavation, i.e. from the beginning to end the project. The results are compared across two different types of excavation; ‘community’ and ‘student’.

### **Ethics**

This study received ethical approval from Manchester Metropolitan University ethical standards board. Permission to take part and the use of the data for research purposes was provided by all participants. The pilot survey identified a number of issues with the mechanisms for data collection, which were remedied in the actual survey: Mechanisms were introduced to provide anonymous participant identification, a requirement for completion of the questionnaire.

### **Criteria for Case Studies**

Participants of six case study excavations were asked to complete PANAS and

MVAS surveys for duration of the projects. 210 individual participants were sampled, 92 individuals agreed to participate in this study. Case studies were divided into two sub-categories: community and student training excavations. Student training excavations involved individuals studying undergraduate archaeology degrees university, who were required as part of their mandatory first and second year course requirements to participate in the excavation. Whereas community projects involved individuals who had volunteered to participate with little or no previous experience of archaeology. Of these, 38 participants were community participants and 54 were students attending training excavations.

Participants were asked to complete MVAS and PANAS on two separate occasions during each project; week one and week three. Case studies were selected against the following criteria:

- Participation: Projects enable all participants to be actively involved in the process of excavation.
- Research: Projects provide both research and training elements, and space and time for individuals to develop new skills.
- Diversity: Case studies represented a diverse range of projects types and participant demographics. These included student training, community projects and mixed group excavations and residential and non-residential projects.
- Range of Contexts: Projects included both UK and Non UK excavations and excavating a range time periods, including Prehistoric, Roman, Anglo-Saxon and Medieval.
- Longevity: Projects ran for a period of at least three weeks. This time period

allowed for a measure of change over time.

## **PANAS**

The PANAS survey was developed by Watson, Clark and Tellegen to measure positive and negative moods (1988). The central components of PANAS are words linked to positive and negative emotions, measured by individual choice against a Likert scale (Watson, Clark and Tellegen, 1988):

1. Very slightly or not at all
2. A little
3. Moderately
4. Quite a bit
5. Extremely

The participant chooses a number from one to five for each emotive word on the list: Positive words included attentive, interested, alert, excited, enthusiastic, strong, inspired, active, proud, determined; negative words included distressed, jittery, guilty, afraid, irritable, ashamed, scared, hostile, nervous and upset. Positive and negative emotions are scored; if a participant scores a low score on positive words and a high score on negative words, they are deemed to be unhappy.

## **Modified Visual Analogy Scale**

This study utilised modified elements of: The Visual Analogue Scale (VAS); the General Health Questionnaire (GHQ); the ONS wellbeing Survey, and; the Warwick-Edinburgh mental wellbeing scale (EuroQol Group, 1990; Evans, J. Macrory, I, and

Randall, C, 2015; Goldberg, D. and Hillier, V. 1979; Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J. & Stewart-Brown, S, 2007). VAS, initially developed to record changes in medical patients' pain and suffering, has become a popular wellbeing measure (EuroQol Group, 1990). For this project the 1 - 100 VAS scale was simplified to a 1-10 Likert-type scale. The decision was made after the pilot study indicated issues with participant understanding of the breadth of the 1-100 scale. The selection of a narrower scale is validated by both the ONS (1-10) and Warwick-Edinburgh measures (1-5). The questions were also modified to incorporate the NEF five wellbeing key elements. These questions included; Thinking about yourself, how interested are you in the world around you? Thinking about your own life, at present how connected do you feel to people around you? When considering your personal happiness, at the moment how happy would you rate yourself? Thinking about your own life and personal circumstances, how satisfied are you with your life as a whole? As such if a participant provided high scores they would be deemed as happy.

Both PANAS and MVAS were used in this study to investigate and measure the impact of 'digging' on psychological wellbeing (PANAS) and personal happiness (MVAS). Qualitative methods including participant observations and conversations were also collected. The responses to the PANAS and MVAS questionnaires were collected via written surveys, which were distributed to participants during weekly site meetings and were completed and returned at specific intervals; the beginning and the end of the project<sup>1</sup>. This provided statistical data on changes in wellbeing during the course of an excavation project.

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<sup>1</sup> Middles interval results (week 2) were gathered during the projects, which will be used for further study into project dynamics and happiness.

## **Pilot**

A pilot study in a controlled environment was undertaken to assess the methodology. This was a residential student-training project; as such external factors and effects were minimized.

## **Results**

For the analysis the data was combined into two groups i.e. students and community participants. Significance tests followed up the differences highlighted initial descriptive statistics for both measures.

Statistical analysis was implemented on PANAS and MVAS results providing overarching data patterns allowing a comparison between the results of both community and student excavations. This involved comparing percentage differences between the mean results from week 1 and week 3. The significance of these results was established through standard deviation, for example; lower variability between results was deemed to illustrate patterns of behavior and abnormal variance was excluded as insignificant.

The Wilcoxon paired sample significance test was implemented on participants' scores from week 1 and week 3 ( $< P$  value). If one score was missing then the participant was excluded from the analysis. As such the number of participants was significantly reduced from 170 to 92 (38 community and 54 students). Because results are statistically significant below 0.025 are considered significant (2.5%). The Wilcoxon one tail test was implemented; this tested for improvement not just difference. The Wilcoxon test was used on pairs of data from two related data sets (for example data from week 1 and week

3), i.e.:

- Dependent variable is measured at a continuous level. For example, MVAS 1-10 point scale and PANAS 5 point scale.
- Independent variable consists of two categorical, related groups. Each group is measured at two intervals, week 1 and week 3. .

### **MVAS results**

Overall MVAS results indicated that the mean scores for connectedness had increased the most at 7.76% (+0.55). Interest had increased the least at 3.56% (+0.22). Happiness improved by 5.28% (+0.52) and satisfaction by 5.76% (+0.36). The mean results from week 1 to week 3 indicate a percentage improvement for all participants across all measured factors of 5.85%. Although these results suggest that overall improvement in wellbeing was low, the Wilcoxon test indicated that the changes in results for connectedness (0.001) and happiness (0.017) were significant (Table 1).

Standard deviation around the mean was lower in the final score (week 3) for all four MVAS aspects, with interest having the largest reduction in variability (-0.42) (*Table 1*). Analysis of mean scores shows patterns emerging in results; the average mean score for week 3 is consistently higher and the variability (SD) is reduced. This narrowed spectrum suggests similar levels of interest across all participants by week 3 (*Figure 1*). For example, interest scores in week 1 ranged between 2 and 10 with a mean score of 7.97 (SD 1.66). Contrastingly, in week 3 scores ranged between 5 and 10 with a mean of 8.22 (SD 1.28) (*Table 1*).

[Table 1. *MVAS Mean Scores, Standard Deviation and Differences for all participants.*]

Comparison of the MVAS data from community and student projects, specifically the mean results from week 1 to week 3, highlighted differences between participants' results. MVAS mean results for community groups indicate interest (0.42), connectivity (0.82), happiness (0.64) and satisfaction (0.93) all increased, with satisfaction and connectivity increasing the most. MVAS mean results for student groups indicate that connectivity (0.33) and happiness (0.36) increased the most, whilst satisfaction (-0.05) decreased slightly. Applying the Wilcoxon test to these results illustrates that both the student and community groups experienced identical, significant changes in connectedness (0.003), and that the community groups underwent significant changes to happiness (0.038) and satisfaction (0.0011). No other changes were statistically significant (Table 2).

The percentage change in average mean scores indicated that participants of the selected community projects gave higher ratings (percentage rises) for all four criteria, i.e. they appeared more interested, connected, satisfied and happier than those participants involved in student excavations. The largest percentage rises for community participants were for satisfaction (11.0%) and connectivity (10.1%) (*Figure 1*). The largest percentage increases for the student projects were for connectivity (6.8%) and happiness (4.4%) (*Figure 1*). However, the student projects also indicated a slight decrease in satisfaction (-2.2%).

[Figure 1. *Community and Student changes in average scores for MVAS.*]

[Table 2. *MVAS results for community and student groups.*]



## PANAS Results

Overall mean PANAS results for positive affects indicate that proud 8.3% (+0.51) and strong 7.2% (+0.40) increased the most; these were the lowest initial ratings (Strong 3.56% and Proud 3.24%) (*Table 3*). Small rises were also recorded for attention (+0.5), alertness (+0.15), inspiration (+0.18) and determination (+0.18) (*Table 3*). Standard deviation highlights that strength (-0.23), pride (-0.20) and inspiration (-0.16) were the affects that had less variability at the end of the project (*Table 3*). The results indicate a slight decrease in interest (-0.04), excitement (-0.21), enthusiasm (-0.14) and activity (-0.90). The Wilcoxon test suggests only the increase in strength (0.004) and decrease in enthusiasm was a statistically significant change from week 1 to 3 (*Table 3*).

[Table 3. Mean score difference and standard deviation, significance for PANAS positive affects.]

Overall mean results for negative affects indicate that irritability increased the most (+0.16) whilst nervousness decreased the most (-0.18). Small rises were recorded for jittery (+0.05), upset (+0.14), distressed (+0.1) and hostile (+0.02) (*Table 4*). Small decreases in mean scores were recorded for guilty (-0.07), scared (-0.04) and afraid (-0.1). Standard Deviation indicates that jittery (0.28), upset (0.26), guilty (-0.19) and irritable (0.19) were less variable at the end of the project than at the beginning (*Table 4*). Mean results for negative affects indicate low scores throughout the testing, which is corroborated by Wilcoxon test, which indicates that the changes in negative affects are statistically insignificant in all but two factors; nervousness, which decreased by -13.5%

(0.030), and guilt, which decreased by -15.3% (0.041) (*Table 4*).

[Table 4. *Mean score difference and standard deviation, significance for PANAS negative affects.*]

Comparison between community and student projects demonstrates significant differences in participant mean PANAS results. PANAS mean positive affect results for community groups indicate that alert (0.25), strong (0.37) proud (0.29) and determined (0.13) increased the most, whilst enthusiastic (-0.15) and excited (-0.11) decreased the most. Of these, the only statistically significant change was participants' feelings of strength (0.011), which increased by 13%. Student positive affect results indicate that proud (0.91), strong (0.33), inspired (0.22) and determined increased the most, whilst interest (-0.09), excited (-0.35) and active (-0.12) decreased the most. The only statistically significant, positive score from these results was pride (0.016), which increased by 19%; Negative changes in interest (0.003), excitement (0.009) and enthusiasm (0.002) were also all statistically significant (*Figure 2*). PANAS negative affect results for community groups indicate irritability (-0.23) and hostility (-0.15) decreased the most, whilst nervousness (0.13) increased the most. Student negative affect results indicated nervousness (-0.39), jittery (-0.17) and afraid (-0.13) decreased the most, whilst irritability (0.43), hostility (0.14), distress (0.12) and upset (0.24) increased the most. These negative affects highlighted disparities between the different groups; participants in community projects only experienced significant reductions in irritability (-27%, 0.17), whilst those involved in students projects experienced significant increases in irritability (0.001), hostility (0.87), and distress (0.018), as well as a positive reduction in nervousness (by -28%, 0.001) (*Figures 2 and 3*).

[Figure 2. *Student and Community changes in PANAS positive affects.*]

[Figure 3. *Student and Community changes in PANAS negative affects.*]

### **Key Findings**

- **Physicality:** Involvement in physical activity, such as archaeological excavation, can result in participants feeling stronger and more active. As a result this can increase personal wellbeing and potentially result in happier people.
- **Connectivity:** Incorporating community elements into projects can enable people to feel more connected to the people around them and the places, and potential result in increased wellbeing and personal happiness..
- **Satisfaction:** Personal happiness, particularly in student training projects, is associated with satisfaction. Potentially, this is related to interest and discoveries such as ‘finds’.
- **Social Dynamics:** Involvement in a community and volunteer activity can result in increased wellbeing and personal happiness, but social dynamics can cause unhappiness where there is friction between individuals.

### **Type of Project**

- **Student Training or Community:** Non-marked, optional, volunteer excavation projects result in increased wellbeing and personal happiness for participants.
- **Residential/Non-Residential:** Decreased wellbeing in residential courses, Non-Residential courses appear happier and wellbeing is increased.

### **Conclusion**

This study of 170 individuals participating in archaeological excavations, in a range of contexts, highlighted several significant changes in wellbeing over a three-week period. Overall results of both the MVAS and PANAS surveys indicated that individuals participating in community projects experienced the greatest increase in wellbeing, as compared to participants involved in student training excavations. For example, in the MVAS survey the combination of low levels of factor increase in mean scores for interest, connectivity and happiness alongside decreased satisfaction, could suggest that participants of student field projects experienced minimal changes in wellbeing. MVAS indicators for participants of community projects recorded increased mean scores for all the wellbeing criteria.

PANAS produced more varied results and recorded minor positive and negative changes to wellbeing indicators. Although a more complex picture, the PANAS results largely corroborate those recorded via the MVAS method. For example, student projects indicated a significant decrease in some positive affects; including interest, excitement and enthusiasm. They also indicated a significant increase in some negative affects, particularly irritability, hostility and distress (Figure 2 and 3). The significant negative impact on participants positive affect and the negative scores that were recorded on student projects were not evident in participant scores from community projects. This corroborates the increased scores for all criteria seen in the MVAS results for community project participants.

The PANAS and MVAS results indicate that community projects and projects incorporating volunteer elements are likely to have a positive impact on participants' wellbeing and personal happiness. Conversely, student-training projects saw the greatest

disparity in weekly results and indicated some negative impacts to wellbeing from involvement in such an excavation. Given the different motivations behind participating in each group, one possible explanation is that negative affects on wellbeing are linked to a lack of choice: Mandatory and grade-assessed attendance could cause increased stress levels amongst the student participants. It follows that there is a potential link between voluntary participation in archaeological excavation and positive wellbeing.

Participants, particularly on student training excavations, experienced greater confusion and emotional struggles whilst completing these surveys. This potentially suggests that PANAS required a higher degree of emotional intelligence from the participants in comparison to the similar and shorter MVAS survey. It is also worth noting that the negative and unexpected PANAS and MVAS results could be an outcome of the relatively short time frame (3 weeks) under which this study operated.

Results were affected by environmental and social influences as well as by the quality of the archaeology being excavated. For instance, during the pilot project (assessed in 2012) the weather was extremely wet, which probably accounted for decreases in some wellbeing mean scores. Amongst the student projects, results indicate negative impacts on wellbeing scores could be also be linked to social tensions between peers. A notable satisfaction increase on several student projects during week three coincided with participants making important and significant archaeological discoveries on site.

Involvement in archaeological excavation projects cannot guarantee increased wellbeing or personal happiness, contrary to assertions made by some academics (Holtorf, 2004; Renfrew, 2006). In part this is because attaining a greater sense of

wellbeing and personal happiness on excavations is influenced by external factors such as personal choice, and social and contextual dynamics. Despite this, this research suggests characteristics can be implemented when designing a project to support the development of community wellbeing and happiness. These are:

- Community Centered
- Context
- Diverse Demographic
- Clear Aims and Objectives
- Freedom and Choice
- Ownership

This study highlights that personal, practical and voluntary involvement in archaeological excavations has the potential to positively influence wellbeing and personal happiness. Specifically, it is the physicality of excavation and the active engagement in the process of archaeological discovery and learning that supports the growth of positive personal attributes, which can result in an increased sense of wellbeing. Consequently, this research highlights the ability of archaeology to enable people to connect, be active, take notice, learn and give, all of which are believed to be the building blocks for greater wellbeing and personal happiness (New Economics Foundation, 2008).

Participatory involvement in archaeological excavation impacts on an individual's wellbeing and consequently has the potential to positively affect personal happiness. This study provides quantitative evidence to suggest that truly voluntary archaeological excavations, i.e. those done in a community-centered framework, can increase wellbeing.

As such, it suggests archaeological excavation projects could and should play a more prominent role in supporting national wellbeing. This research therefore highlights a need for national planning concerned with raising net happiness to incorporate supporting voluntary opportunities in participatory archaeological projects.

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